

IDAHO DEPARTMENT OF FISH AND GAME

**FEDERAL AID IN FISH RESTORATION
1997 Job Performance Report
Program F-71-R-22**



REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS MCCALL SUBREGION (Subprojects I-C, II-C, III-C, IV-C)

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Job a.	McCall Subregion Mountain Lakes Investigations
Job b.	McCall Subregion Lowland Lakes Investigations
Job c.	McCall Subregion Rivers and Streams Investigations
PROJECT II.	TECHNICAL GUIDANCE
PROJECT III.	HABITAT MANAGEMENT

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1997 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-22

Project I: Surveys and Inventories

Subproject I-C: McCall Subregion

Job: a

Title: Mountain Lakes Investigations

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

Fish population status and/or physical habitat parameters were surveyed and stocking strategies were assessed on nineteen mountain lakes in 1997 in cooperation with the U.S. Forest Service.

No fish were observed in Shelly Ann Lake or Belvidere Lakes #1 or #2. Rainbow trout *Oncorhynchus mykiss* were collected from Mary, Squaw, Boulder, Blue, Cly #2, Horton and Summit Lakes. Brook trout *Salvelinus fontinalis* were collected from Lloyds, John, Ellis and Gay Lakes. Cutthroat trout *O. clarki lewisi* were collected from Belvedere #4, Pearl, Squaw, Buck, Ho, Cly #2, Lloyds and Horton Lakes.

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OBJECTIVES

1. Evaluate fisheries management strategies in alpine lakes.
2. Identify problems and/or opportunities in lakes that currently are not being directly managed.

INTRODUCTION

The Idaho Department of Fish and Game (IDFG) entered a cooperative project with the United States Forest Service (USFS), Payette National Forest (PNF) in 1989 to assess fish population status, physical habitat parameters and past stocking strategies in a selected number of alpine lakes. This program continued through 1997. IDFG and PNF personnel worked cooperatively to collect the data used in this report. A more detailed habitat survey report will be written by the USFS. Past data collected from this project were presented by Weaver (1992 and 1994), Janssen and Anderson (1992 and 1994), and Janssen et al. (1994 and 1997).

A total of 19 mountain lakes were examined in 1997 by USFS and IDFG personnel.

METHODS

Fish populations were sampled in each lake by collecting fish with one experimental diving gill net (150 ft) set perpendicular to the shore. Nets were set in the afternoon and were pulled the next morning. All fish collected were weighed to the nearest gram and total length measured to the nearest millimeter.

Physical habitat and chemical variables were measured on each lake. Maximum and mean lake depths, the number of inlets and outlets, pH, conductivity, surface/ bottom temperature and alkalinity were determined by IDFG personnel. Also, the presence of suitable trout spawning habitat in each outlet and inlet (based on presence of gravel substrates) was noted and the length of the habitat available was estimated (m). The methods used by USFS personnel and results were described in Weaver (1992; 1994). IDFG personnel used the IDFG standard mountain lake survey form. Global positioning system (GPS) coordinates were recorded for the major outlet of each lake.

RESULTS

Idaho Department of Fish and Game personnel collected fish population and habitat data from eleven mountain lakes and the USFS collected data from 8 lakes. Fish were found in 16 of the 19 lakes surveyed. Results of fish sampling efforts are listed in Table 1. IDFG lake catalog identification numbers are referenced in parenthesis.

John Lake (07-209) and Gay Lake (07-205) had both been stocked previously with rainbow trout *Oncorhynchus mykiss* and were currently on the stocking schedule, however, no rainbow trout were captured. Brook trout *Salvelinus fontinalis* between 4 and 12 inches were collected in both lakes. Relative weights of these fish are given in Table 1.

Blue Lake (09-256), and Summit Lake (07-518) supported populations of only rainbow trout. Summit Lake was dominated by a large population of small rainbow trout.

Gill netting revealed Squaw Lake (09-370), Mary Lake, Horton Lake (09-381) and Boulder Lake (09-321) to have both rainbow and westslope cutthroat trout *O. clarki lewisi* populations. Both rainbow and westslope cutthroat trout in Squaw Lake had excellent condition factors (around 1.0). In Boulder Lake only two rainbow trout were sampled.

Belvidere #4 (07-723), Pearl Lake (09-390), Ho Lake (07-347), North Cly Lake #2 (07-357) and Buck Lake (09-368) supported populations of only westslope cutthroat trout. Eleven of 12 cutthroat trout from Buck Lake were greater than 10 inches. Pearl Lake also had a good population of cutthroat trout with half of the fish greater than 9 inches in length. Fish greater than 15 inches were sampled in both Cly and Ho Lakes.

Brook trout were collected in Lloyds Lake (07-167) and both brook trout and westslope cutthroat trout were collected from Ellis Lake (09-382). Both lakes had been stocked with cutthroat trout every third year with the last stocking in 1995.

We found no fish in Belvidere lakes #1 and 2 and Shelly Ann Lake. We collected only one fish from Tule Lake which has a trophy regulation on it. The fish collected was a 17-inch rainbow x cutthroat hybrid.

Table 1. Total number and average condition factors (Ktl) or relative weights (Wr) by length group of each species of fish sampled in mountain lakes in 1997.

			Total lengths (inches)														
Lake	Catalog Number	Species, Ktl or Wr	4	5	6	7	8	9	10	11	12	13	14	15	16	17	17+
Mary		rbt			1		3		2	3							
		Ktl			0.9		0.71		1.07	0.86							
		cutt					1										
		Ktl					0.51										
Gay		brook			2	2		8	3	2							
		Wr			85	76		79	76.6	63.2							
Pearl	09-390	cutt	1		1	2	5	2		7							
		Ktl				N/A	1.2	1.3		1.0							
Squaw	09-370	rbt				3	6	2		1				1	1	1	
		Ktl				1.0	0.8	0.9		0.9				0.9	0.83	0.8	
		cutt			1	3	1			1	4	4					
		Ktl			0.9	0.99	0.83			0.92	0.99	1.08					
Buck	09-368	cutt				1			1	1	2	3	1	3			
		Ktl				1.14			1.1	1.13	1.01	1.02	0.9	1.0			
Blue	09-256	rbt			1	1	1		5	2			1				
		Ktl			1.2	1.01	1.17		1.03	1.05			1.1				

RECOMMENDATIONS

1. Discontinue stocking John Lake (07-209), Gay Lake (07-205) and Lloyds Lake (07-167) with rainbow trout due to presence of brook trout .
2. Reduce cutthroat trout in Pearl Lake from 1500 to 1000 fish.
3. Investigate meadow stream above Squaw Lake (09-370) for reproduction of cutthroat and rainbow trout.
4. Continue to monitor fish populations in high mountain lakes in the region and make appropriate management changes.
5. Continue working with the Payette National Forest personnel collecting baseline fisheries and habitat data in high mountain lakes.

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1997 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-22

Project I: Surveys and Inventories

Subproject I-C: McCall Subregion

Job: b

Title: Lowland Lakes Investigations

Period Covered: July 1, 1997 to June 30, 1998

ABSTRACT

We used a midwater trawl to estimate the population of age 0+, 1+, and 2+ kokanee *Oncorhynchus nerka* in Payette Lake on August 6, 1997. The respective population estimates were: 105,815 +/- 45,500 (95% C.I.), 334,873 +/- 127,252 and 48,027 +/- 27,375, respectively.

We gillnetted Little Payette Lake in October to monitor relative numbers and biomass of fish species present. Trout and char species made up 12.7% and 13.8% of the catch by total number and total weight, respectively. Squawfish *Ptychocheilus oregonensis* and largescale suckers *Catostomus macrocheilus* made up 87.3% and 86.2% of the total catch by total number and total weight respectively.

We made Cascade Reservoir aerial angler counts on Memorial Day, July 4th, and Labor Day to compare relative angling pressure with past survey years. The average number of fishing boats and shore anglers were 36.5 and 19, respectively.

We completed standard lowland lake surveys on Brundage Reservoir, Herrick Reservoir, Corral Reservoir, Tripod Reservoir and Warm Lake. We collected 59 and 73 rainbow trout *O. mykiss* on 6/17/97 and 8/26/97, respectively from Brundage Reservoir. Fish ranged in size from 164 mm and 42 g. to 320 mm and 246 g on 6/17/97 and from 141 mm and 34 g to 376 mm and 404 g on 8/26/97. Condition factors averaged 0.95 and 1.00 on 6/17 and 8/26/97, respectively. No other species of fish were collected.

We collected 18 rainbow trout from Corral Reservoir and all but one appeared to be from 1997 catchable stockings. One fish of 310 mm and 355 g appeared to be a holdover from 1996 stockings and one 275 mm fish appeared to be of wild origin. No other species of fish were collected.

We collected 89 rainbow trout from Herrick Reservoir of which six appeared to be of wild origin and two appeared to be holdovers from the previous years stockings. The rainbow trout collected ranged in size from 115 mm and 15 g to 370 mm and 450 g. Condition factors averaged 1.30. No other species of fish were collected.

We collected 28 rainbow trout from Tripod Reservoir of which three were holdovers from the previous years stockings. Rainbow trout ranged in size from 190 mm and 75 g to 380 mm and 555 g. Condition factors averaged 1.26. No other species of fish were collected.

We collected 8 species of fish from Warm Lake which included 544 mountain suckers *Catostomus*

platyrhynchus, the majority of which were sexually mature, ripe, spawning adults. We also collected 32 mountain whitefish *Prosopium williamsoni*, 16 rainbow trout, 1 bull trout *Salvelinus confluentus*, 14 brook trout *S. fontinalis*, 1 bull trout x brook trout hybrid, 3 redbreast shiners *Richardsonius balteatus* and 1 kokanee.

We estimated 2,441 angler hours were spent to catch 1,772 fish on May 24-25, 1997 on Horsethief Reservoir. The overall catch rate was 0.73 trout. The catch composition was 99% rainbow trout and 1% brown trout *Salmo trutta*. Of the total estimated angler hours, shore anglers made up 68%, boat anglers 25%, and float tube anglers 7% of the total.

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OBJECTIVES

To conduct investigations in lowland lakes and reservoirs to maintain, protect and enhance McCall area fisheries.

INTRODUCTION

Payette Lake

Payette Lake was previously described by Grunder et al. (1990). We conducted the annual kokanee *Oncorhynchus nerka kennerlyi* age class population estimate in 1997.

Little Payette Lake

The quality rainbow trout *Oncorhynchus mykiss* fishery in Little Payette Lake has been threatened in recent years by an increasing populations of squawfish *Ptychocheilus oregonensis* and largescale suckers *Catostomus macrocheilus* (Janssen and Anderson, 1992 and 1994, and Janssen et al., 1994 and 1997). We surveyed the fish population again in 1997 to monitor trout growth, condition, and relative abundance of fish populations.

Cascade Reservoir Angler Counts

Angler counts were made on Memorial Day, July 4th and Labor Day to compare relative angling pressure with past survey years (Janssen and Anderson, as yet unpublished).

Standard Lowland Lake Gillnet Surveys

Fish populations in Brundage Reservoir, Warm Lake, Coral Reservoir, Herrick Reservoir and Tripod Reservoir were surveyed to determine effectiveness of current fish management strategies.

Horsethief Reservoir

A Memorial Day Weekend creel survey was conducted on Saturday and Sunday of that weekend to continue our annual angler use trend work.

METHODS

Payette Lake

Biologists sampled kokanee in Payette Lake, for the tenth consecutive year, on August 6 and 7, 1997 with a midwater trawl (Janssen et al 1997). The methodology for the trawling technique was reported by Bowles (1986, 1987) and Grunder (1991).

Little Payette Lake

On October 28, 1997 we set four standard lake survey gill nets in Little Payette Lake (four diving nets). We connected two of the diving nets end-to-end to fish a longer, deeper section of bottom contour. We fished two locations with the four nets. The nets were set in the afternoon, fished all night, and pulled the next morning. All trout collected were measured to the nearest mm and weighed to the nearest 5 grams. All suckers and squawfish collected were counted and a total weight taken. We examined all trout collected for fin clips.

Cascade Reservoir Angler Counts

We completed angler counts on Memorial Day, July Fourth and Labor Day on Cascade Reservoir. Counts were conducted utilizing a fixed wing airplane. Counts were made at 1000, 1400 and 1800 hrs on each day. All shore anglers and all fishing boats were counted.

Standard Lowland Lake Gillnet Surveys

Brundage Reservoir

We set two standard, diving, experimental gill nets in two separate locations in Brundage Reservoir. Each net was set perpendicular to shore with the small mesh end attached to the shore. The nets were set in the afternoon, fished all night and pulled the next night. We netted on two different dates: 6/17/97 and 8/26/97.

Warm Lake

We set two standard, diving, experimental gill nets and two standard, floating, experimental gill nets in four separate locations in Warm Lake. Each net was set perpendicular to shore with the small mesh end attached to the shore. The nets were set on the afternoon of 5/14/97, fished overnight and pulled the next day.

Corral Reservoir

We set one standard, diving, experimental gill net in Corral Reservoir. The net was set perpendicular to shore with the small mesh end attached to the shore. The net was set on the afternoon of 7/1/97, fished overnight and pulled the next day.

Herrick Reservoir

We set one standard, diving, experimental gill net in Herrick Reservoir. The net was set perpendicular to shore with the small mesh end attached to the shore. The net was set on the afternoon of 7/1/97, fished overnight and pulled the next day.

Tripod Reservoir

We set one standard, diving, experimental gill net in Tripod Reservoir. The net was set perpendicular to shore with the small mesh end attached to the shore. The net was set on the afternoon of 6/24/97, fished overnight and pulled the next day.

Horsethief Reservoir

We conducted the Memorial Day weekend creel survey on May 24 and 25, 1997. All shore, boat, and float tube anglers were counted at two-hour intervals beginning at 0730, with the last count at 1930 hours for a total of seven counts each day. Between counts as many anglers as possible were contacted to record number of hours fished, species, and numbers of fish harvested.

RESULTS

Payette Lake

Kokanee Population Status

We estimated the population size of wild, age 0+ and age 1+ kokanee in Payette Lake to be 105,815 \pm 43% (95% CI) and 334,866 \pm 38% fish respectively (Table 1). Mean densities (fish/ha) of age 0+ and 1+ were 62 and 195 fish/ha, respectively.

Total kokanee biomass, not including adult fish, (age 3+) was estimated at 4.16 kg/ha (the trawl does not collect age 3+ fish as efficiently as other age classes). Total biomass, including 1997 spawner escapement estimates (1997 Annual Progress Report, Rivers and Streams Investigations Section) was 9.7

kg/ha. There was a shoreline spawning component of the kokanee population, in addition to this estimate, which was not estimated but is believed to be insignificant in terms of numbers.

Table 1. Summary of mid-water trawl data collected at Payette Lake, Idaho in 1980, and 1988 through 1996 with 95% error bounds in \pm (%). All estimates are based on a useable surface area of 1,715 ha (> 40 ft depth).

Number of Hatchery Kokanee						
Year of Estimate	Number Stocked	Age				Spawners ¹ (3+)
		0+	1+	2+	3+	
1988	350,000	34,000	0	0		
1989	350,000	18,000	0	0		
1990	301,000	27,000	0	0		
1991	158,000			0		
1992	130,530	19,774(79%)				
1993 ²	125,400	11,444(98%)	0	0		
1994	0 (stockings discontinued)		0			

Number of Wild/Natural Kokanee						
1980		100,000	73,000	16,000	20,000	
1988		74,800(40%)	<2,000(85%)	9,000(88%)	22,800	
1989		120,000(33%)	21,000(33%)	0	14,500	
1990		134,000(45%)	26,000(45%)	10,000(100%)	16,700	
1991 ³		128,000(28%)	67,500*	1,187	18,000	
1992		202,240(21%)	30,887(41%)	5,015(118%)	29,300	
1993 ²		301,744(104%)	117,215(65%)	7,271(83%)	59,310	
1994		152,689(88%)	46,974(54%)	30,432(99%)	44,200	
1995		194,242(57%)	107,929(33%)	54,635(65%)	55,450	
1996		251,339(51%)	132,234(63%)	35,205(44%)	60,707	
1997		105,815(43%)	334,873(38%)	48,027(57%)	64,891	

Estimated Wild Kokanee Densities (fish/ha)						
1980		58	43	9		
1988		44	<2	5	13	
1989		70	12	0	8	
1990		78	15	6	10	
1991 ³		75	39 ⁴	0.69	10.5	
1992		118	18	3	17	
1993 ²		176	68	4	35	
1994		89	27	18	26	
1995		113	63	32	32	
1996		147	77	13	35	
1997		62	195	28	38	

Estimated Wild Kokanee Biomass (KG/HA)					Total	
1980		.04	0.9	0.5	1.8	
1988		.06	.03	NA	NA	
1989			0.24 (for ages 0+, 1+ and 2+ combined)		4.7	
1990		.07	0.13	0.8	2.9	
1991 ³		.075	1.2 ³	0.1	4.5	
1992		.15	1.1	0.45	NA	
1993 ²		.10	1.8	0.6	NA	
1994		.10	1.9	0.6	NA	
1995		.04	1.4	2.8	8.1	
1996		.05	1.07	1.6	9.0	
1997		.007	2.3	1.8	1.75	
					8.4	
					9.7	

¹Based on corrected spawner escapement counts in N. Fork Payette River (1.73 X peak spawner count)(Frost and Bennett, 1994)

²Estimate was made in August instead of September when other years estimates were made

³Includes age 0+ hatchery fish

⁴ Includes age 0+ hatchery fish.

Little Payette Lake

We collected 254 fish in gill nets during the survey on October 28, 1997. This included 140 large-scale suckers, 82 northern squawfish, 25 rainbow trout, 5 splake, and 2 rainbow trout x cutthroat trout *Oncorhynchus clarki* hybrids (Table 2).

Salmonids made up 13.8% of the biomass and 12.2% by number of all fish collected (Table 2). Rainbow trout ranged in total length from 221 to 445 mm. Rainbow trout x cutthroat trout hybrids ranged in total length from 544 to 445 mm. Quality sized (>406 mm) rainbow trout and hybrids made up 28% of all trout collected. Of the 9 trout greater than 406 mm, 2 were rainbow x cutthroat hybrids. Both hybrids, were greater than 508 mm (Table 3). Condition factors (Ktl) averaged 1.2 for all length groups of rainbow trout. Average rainbow trout Ktl's were 1.2 and 1.00 for fish less than and greater than 406 mm respectively (Table 4).

Table 2. Numbers and biomass of all species of fish collected with gill nets on October 28, 1997 on Little Payette Lake.

Species	<u>N</u>	% of total by number	Total weight (kg)	% of total by weight
rainbow trout	25	9.9	8.9	9.4
rain. x cutt. hybrid	2	.80	2.5	2.6
splake	5	2.0	1.7	1.8
squawfish	82	32.3	31.5	33.3
largescale sucker	140	55	50.1	52.9
TOTALS	254		94.7	

Table 3. Length frequencies of rainbow trout and rainbow x cutthroat trout hybrids (#) gillnetted in Little Payette Lake in October 1997.

Total Length (mm)	Total Number	
200	0	
210	0	
220	0	
230	0	
240	3	
250	2	
260	3	
270	4	
280	2	
290	1	
300	0	
310	0	
320	0	
330	0	
340	0	
350	1	
360	1	
370	0	
380	0	
390	1	
<u>400</u>	<u>2</u>	<u>406mm = 16 inches</u>
410	1	
420	2	
430	0	
440	1	
450	1	
460	0	
470	0	
480	0	
490	0	
500	0	
540	(1)	
600	(1)	

Table 4. Average length, weight and condition (Ktl) of rainbow trout, by length group, collected from Little Payette Lake on October 28, 1997.

Total length (mm)	N	Average length(mm)	Average weight(g)	Average .Ktl
0-406 (<16 in.)	20	296	241	1.2
407-550 (16 in.)	7	473	1,091	1.0

Cascade Reservoir Angler Counts

Angler counts were lower this year than in past surveys (Table 5). No structured creel surveys were conducted this year however it was apparent that perch *Perca flavescens* fishing on the reservoir was virtually non-existent as adult perch populations appeared to have declined below their cyclic lows. Most angling pressure on the reservoir targeted rainbow trout with success reportedly better this year than in the past several years.

Table 5. Average boat and shore angler counts on Cascade Reservoir on three major holidays: Memorial Day, July 4th and Labor day, in 1982, 91, 92, 96 and 97 with corresponding intensive creel survey annual pressure estimates for 1982, 91 and 92.

	YEAR				
	1982	1991	1992	1996	1997
	Average of holiday counts				
Ave # Boats	154	41.5	52.5	35	36.5
Ave # Shore Anglers	85	32	116	27	19
Actual Pressure Estimate (Hours x 1000)					
Boat	255.6	135.2	144.2	NA	NA
Shore	129.8	102.0	177.3	NA	NA
Total Pressure	385.4	237.2	321.5	NA	NA

Standard Lowland Lake Gillnet Surveys

Brundage Reservoir

We collected 59 and 73 rainbow trout on 6/17/97 and 8/26/97 (Table 6). Fish ranged in size from 164 mm and 42 g to 320 mm and 246 g on 6/17/97 and from 141 mm and 34 g to 376 mm and 404 g on 8/26/97. Condition factors averaged 0.95 and 1.00 on 6/17 and 8/26/97. Of all the rainbow trout collected 41% and 62% of the fish collected on 6/17 and 8/26/97 appeared to be of wild origin (straight fins). No other species of fish were collected.

Corral Reservoir

We collected 18 rainbow trout from Corral Reservoir and all but one appeared to be from 1997 catchable stockings (Table 6). One fish of 310 mm and 355 g appeared to be a holdover from 1996 stockings and one 275 mm fish appeared to be of wild origin. No other species of fish were collected.

Herrick Reservoir

We collected 89 rainbow trout from Herrick Reservoir of which 6 appeared to be of wild origin and two appeared to be holdovers from the previous years stockings (Table 6). The rainbow trout collected ranged in size from 115 mm and 15 g to 370 mm and 450 g. Condition factors averaged 1.30. No other species of fish were collected.

Tripod Reservoir

We collected 28 rainbow trout from Tripod Reservoir of which three were holdovers from the previous years stockings (Table 6). Rainbow trout ranged in size from 190 mm and 75 g to 380 mm and 555 g. Condition factors averaged 1.26. No other species of fish were collected.

Warm Lake

We collected 8 species of fish from Warm Lake which included 544 mountain suckers *Catostomus platyrhynchus*, the majority of which were sexual mature, ripe, spawning adults. We also collected 32 mountain whitefish *Prosopium williamsoni*, 16 rainbow trout, one bull trout *Salvelinus confluentus*, 14 brook trout *S. fontinalis*, one bull trout x brook trout hybrid, three reidside shiners *Richardsonius balteatus* and one kokanee. Length frequencies, average weight, and condition factors of trout are presented in Table 7. Numbers and biomass of all species are presented in Table 8.

Table 6. Length frequencies, average weight and average condition factors (Ktl) of rainbow trout collected from Brundage Reservoir, Corral Reservoir, Herrick Reservoir, and Tripod Reservoir in 1997.

Total length Inches (MM)	Water														
	Brundage (6/17)			Brundage (8/26)			Corral			Herrick			Tripod		
	#	Ave. weight	Ktl	#	Ave. weight	Ktl	#	Ave. weight	Ktl	#	Ave. weight	Ktl	#	Ave. weight	Ktl
4 (102)										3	15	0.99			
5 (127)				3	35	1.51				1	30	1.13			
6 (152)	3	47	0.94	10	50	1.10				1	40	1.02			
7 (178)	10	55	0.88	8	68.5	1.07				4	140	1.29	1	190	1.09
8 (203)	2	101	0.93	4	104	1.02	2	115	1.16	40	189	1.30	2	130	1.31
9 (229)	4	124	0.92	19	141	0.99	6	178	1.31	33	230	1.27	7	172	1.38
10 (250)	13	203	1.08	10	187	0.99	6	236	1.22	4	321	1.32	3	282	1.45
11 (280)	8	238	0.97	6	255	0.98	2	307.5	1.33				4	345	1.42
12 (305)	3	243	0.75	6	285	0.91	1	355	0.84	1	365	1.03	6	345	1.14
13 (330)	11	311	0.92	4	358	0.84				1	450	1.13			
14 (356)	2	402	0.82	2	380	0.77							2	612	1.20
15 (381)	1	580	0.95										1	555	1.01

Table 7. Length frequencies, average weight and average condition factors (Ktl) of rainbow trout, brook trout, bull trout, and bull x brook hybrids collected from Warm Lake on May 14, 1997.

Total length inches (mm)	Species											
	Rainbow trout			Brook trout			Bull trout			Bull x brook		
	#	Ave. weight	Ktl	#	Ave. weight	Wr	#	Ave. weight		#	Ave. weight	
4 (102)												
5 (127)												
6 (152)	2	44	0.90									
7 (178)	9	52	0.88	2	56	76						
8 (203)				2	97	80						
9 (229)				2	132	77						
10 (250)	3	153	0.85	4	177	76						
11 (280)	1	226	0.93	1	246	71						
12 (305)				2	322	83						
13 (330)				1	375	75	1	330		1	380	
14 (356)												
15 (381)												

Table 8. Numbers and biomass of all species of fish collected with gill nets on May 14, 1997 on Warm Lake.

Species	<u>N</u>	% of total by number	Total weight (kg)	% of total by weight
mountain sucker	544	89	53.6	77
rainbow trout	16	2.6	1.4	2
brook trout	14	2.3	2.5	4
bull trout	1	.2	.33	.5
bull x brook trout	1	.2	.38	.5
mountain whitefish	32	5.2	11.4	16.3
redside shiner	3	.49	0	0
kokanee	1	.2	.11	.15
TOTALS	612		69.7	

Horsethief Reservoir

We estimated 2,441 angler hours were spent to catch 1,772 fish on May 24-25, 1997 (Table 9.). The overall catch rate was 0.73 trout/h. The catch composition was 99% rainbow trout and 1% brown trout *Salmo trutta* . Of the total estimated angler hours, shore anglers made up 68%, boat anglers 25%, and float tube anglers 7% of the total.

We found total fishing pressure was virtually the same on both days with 1,189 total hours spent on Saturday (5/24) and 1,251 total hours spent on Sunday (5/25). Trout catch rates were better on Saturday (0.87 f/h) than Sunday (0.59 f/h). No yellow perch were observed in the creel, however there were reports of yellow perch being caught. Historical Memorial Day Weekend creel survey data (1994 and 1974 through 1988) is presented in Grunder et al. (1990) and Janssen et al. (2000).

Table 9. Average angler counts and estimates of total angling pressure and harvest by angler type and species for Horsethief Reservoir in 1997.

Date	Ave. Angler Counts			Total Estimated Angling Pressure				Estimated # of Fish Harvested			
	Shore	Boat	Tube	Shore	Boat	Tube	Total	Rbt	Brn	Brk	Total
5/24/97	52.5	19.8	42	787.5	297	105	1,189.5	1,022	12	0	1,034
5/25/97	57.3	22.3	3.8	859.5	334.5	57.45	1,251.45	734	4	0	738

RECOMMENDATIONS

1. Continue trawling in Payette Lake to monitor kokanee age class strength and investigate speeding up trawl to make it more efficient.
2. Continue to monitor nongame fish populations and their effects on rainbow trout growth in Little Payette Lake.
3. Continue holiday angler counts on Cascade Reservoir to monitor angling pressure.
4. Continue monitoring effects of the bass regulation change on Oxbow Reservoir.
5. Continue monitoring angling pressure and harvest on Memorial Day weekend on Horsethief Reservoir.

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1997 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-22

Project I: Surveys and Inventories

Subproject I-C: McCall Subregion

Job: c

Title: Rivers and Streams Investigations

Contract Period Covered: July 1, 1997 to June 30, 1998

ABSTRACT

We estimated the 1997 kokanee salmon *Oncorhynchus nerka kennerlyi* spawning run in the North Fork Payette River above Payette Lake to be 64,891 fish with a total biomass of 9,603 kg. Nampa fish hatchery personnel trapped and spawned 2,092 females collecting 736,737 eggs.

We completed three fish population and fish habitat survey transects on Indian Creek, a tributary to Oxbow Reservoir. We found rainbow trout *O. mykiss* and brook trout *Salvelinus fontinalis* in the two furthest downstream transects and bull trout *S. confluentus*, bull trout x brook trout hybrids, brook trout and rainbow trout in the furthest upstream transect.

We also completed standard stream surveys on three North Fork Payette River tributaries: Fawn Creek, Bogus Creek and Tripod Creek. Rainbow trout were the only fish found in Bogus and Fawn Creeks. Rainbow trout and brook trout were found in Tripod Creek.

Anglers were guided by Wapiti Meadows Ranch Outfitters in a three mile section of the South Fork Salmon River below the confluence with the East Fork South Fork Salmon River, throughout the East Fork South Fork Salmon River, and in lower Johnson Creek. All fishing was catch-and-release. Steelhead/redband trout *O. mykiss gairdneri*, cutthroat trout *Oncorhynchus clarki*, and mountain whitefish *Prosopium williamsoni* were reported in the catch. Average catch rates ranged from 0.2 fish/hr in Johnson Creek, 2.1 fish/hr in the South Fork and East Fork South Fork Salmon River.

Abundance of resident and anadromous fish from permanent snorkel sample sites in the South Fork Salmon, upper Middle Fork Salmon, and Little Salmon river drainages are presented for 1986 through 1997.

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OBJECTIVES

To maintain information for fishery management activities and decisions for rivers and streams.

INTRODUCTION

North Fork Payette River above Payette Lake

The spawning run of kokanee *Oncorhynchus nerka* in the North Fork Payette River (NFPR) above Payette Lake has been monitored since 1988 to assess spawning escapement and to serve as a method of validating kokanee population/density estimates and survival estimates from trawling (Janssen et al. 1997). This estimate was completed again in 1997.

Indian Creek (Hells Canyon Reservoir Tributary)

A nuclear DNA analysis of bull trout *Salvelinus confluentus* in Indian Creek was completed by Spruell and Allendorf (1997) as part of an analysis of bull trout populations in Oregon State. We completed standard Idaho Department of Fish and Game (IDFG) fish and habitat surveys on Indian Creek in 1997 to determine the range of bull trout and brook trout *Salvelinus fontinalis*.

Standard Stream Surveys

We completed standard IDFG stream surveys on Tripod, Fawn and Bogus Creeks in 1997.

South Fork Salmon River Guided Fishery

Wapiti Meadows Ranch Outfitters offer catch-and-release fishing on a section of the South Fork Salmon River from the Hamilton Creek to Threemile Creek, down river from the confluence with the Secesh River. The outfitter is required to report effort and catch. Annual reports will allow us to track trends in this fishery.

Idaho Habitat and Natural Production Monitoring

The IDFG has been monitoring trends in juvenile spring and summer chinook salmon *Oncorhynchus tshawytscha* annual basis since 1984. Permanent monitoring sites are surveyed by snorkeling and data used to describe population trends on a drainage and basin wide basis (Hall-Griswold and Petrosky 1996). Resident fish data collected concurrently are not routinely reported. Sites surveyed by McCall regional personnel in the South Fork Salmon River, Upper Middle Fork Salmon River tributaries, and the Little Salmon River are summarized here along with juvenile chinook and steelhead data.

METHODS

North Fork Payette River above Payette Lake

We visually counted all live spawning kokanee on four different dates through the peak of the spawning run. The counts were made by walking the entire stretch of river utilized by spawning. The total spawning run estimate was then made by multiplying the largest daily, live spawner count by 1.73 (Frost and Bennett 1995).

Indian Creek (Hells Canyon Reservoir Tributary)

We completed three IDFG standard stream surveys on Indian Creek. The first and furthest upstream site (transect #1) was located at the Indian Creek bridge on USFS road 105 adjacent to the Blue Jacket Mine (Figure 1). Transect #2 was located 0.4 road miles downstream of USFS roads 105 and 106 intersection (2.8 miles below transect #1 (Figure 2). Transect #3 (furthest downstream) was located 0.25 mile west of the Indian Creek road and Huntley Gulch road intersection (Figure 3).

We used electrofishing gear to sample fish in the transect. We made one pass, collecting all fish observed. All fish collected were identified to species, counted, weighed and measured.

Electronic temperature recorders were placed in two locations on Indian Creek. One recorder was placed just downstream of the Huntley Gulch road culvert and the second recorder was placed just downstream of the bridge on USFS road 105 adjacent to the Blue Jacket Mine.

Standard Stream Surveys

Stream surveys were completed using standard stream survey guidelines presented in the August 15, 1994, Idaho Department of Fish and Game Memorandum from Bill Horton.

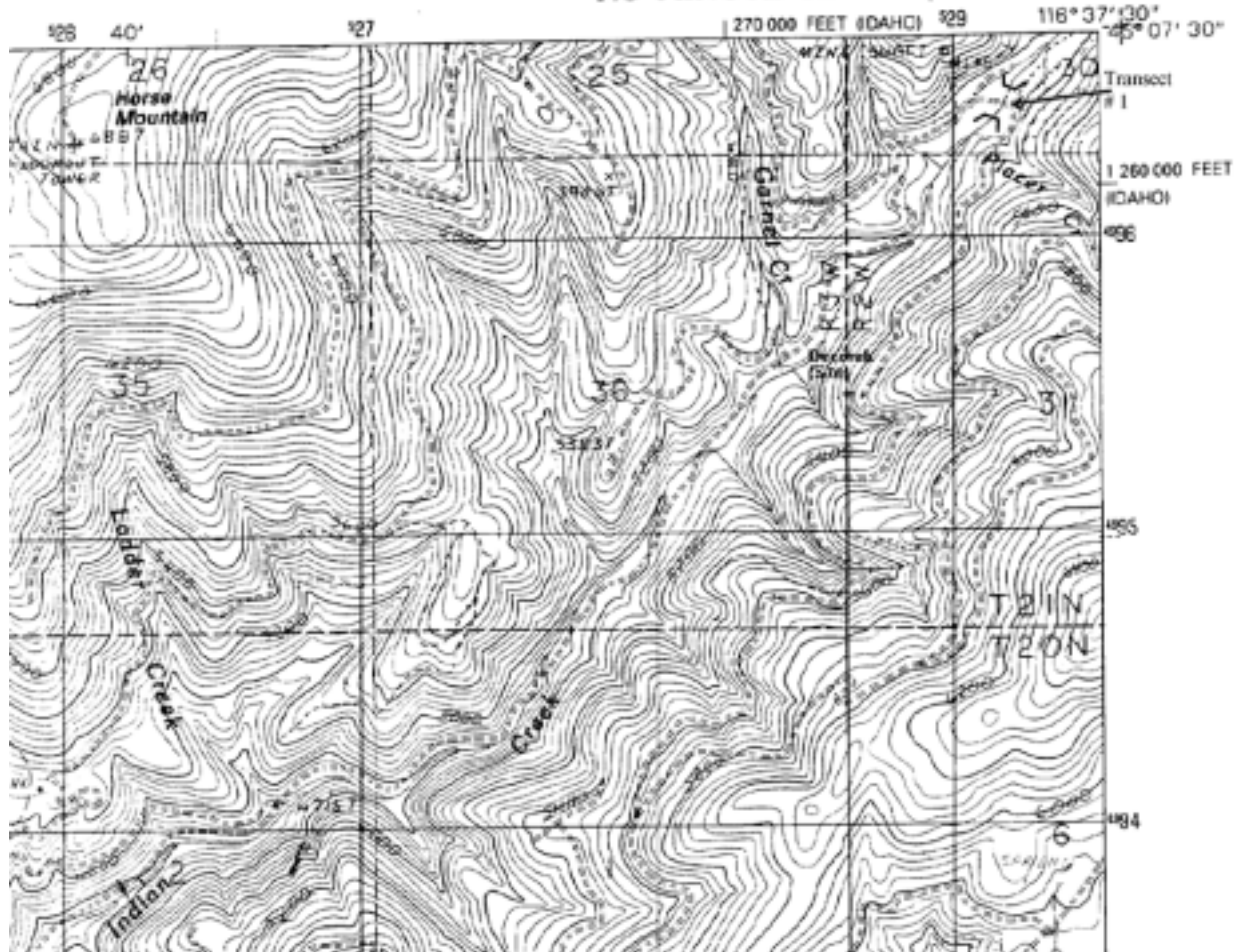
South Fork Salmon River Guided Fishery

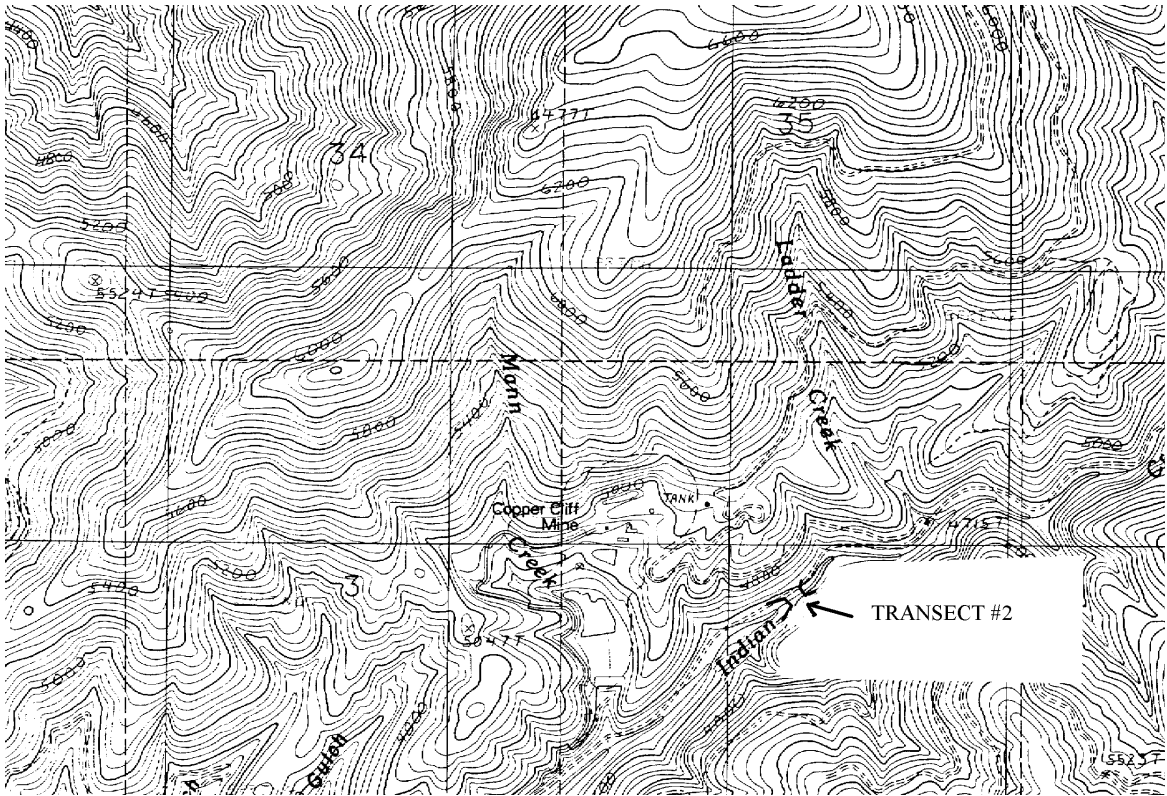
We provided Wapiti Meadows Ranch with angler diaries made specifically for monitoring this fishery. Guides were asked to have clients record time fished, species caught, and fish length to the nearest inch. There was also space provided in the diary for comments, and an opportunity for the angler to have his or her diary returned after analysis.

Idaho Habitat and Natural Production Monitoring

Guidelines for monitoring streams to adequately track trends in anadromous fish populations are described by Hall-Griswold and Petrosky (1996). Because of other ongoing research in some streams, some of the data presented here were collected by Nez Perce or Shoshone-Bannock tribes. Appendix A describes the protocol for snorkel surveys of stream sections.

**CUPRUM QUADRANGLE
IDAHO-OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)**





RESULTS

North Fork Payette River above Payette Lake

The peak kokanee spawner count was 36,300 live fish on September 19, 1997. In addition, Nampa Fish Hatchery personnel trapped and spawned 2,092 females collecting 736,737 eggs. Males were released back into the river after spawning. The total spawning run estimate including those trapped was 64,891 fish. This is the highest spawner count since counts were begun in 1988 (Table 1). Average fork length of post spawned fish was 256 mm and 237 mm for males and females respectively. The average pre-spawn weight of these fish was 147 g.

Table 1. Estimated total kokanee spawning run size and biomass from 1988 through 1997 for Payette Lake (1,715 ha usable kokanee depth(> 40 ft)).

Year	Peak count	Estimated # spawners	Kg/ha	#/ha	Average wgt/fish (g)
1988	13,200	22,800	4.6	13.3	346
1989	8,400	14,500	2.9	8.4	349
1990	9,642	16,700	3.5	9.7	358
1991	10,400	18,000	5.3	10.5	505
1992	16,945	29,300	6.4	17.1	377
1993	34,994	59,310 ¹	8.5	34.6	245
1994	25,550	44,200	5.5	25.8	214 ²
1995	32,050	55,450	4.8	32.3	147
1996	35,090	60,707	5.7	35.4	162 ³
1997	36,300	64,891 ⁴	5.6	37.8	148
¹ Estimate made from shore and weir counts (Frost and Bennett, 1994) ² From gill net data of captured spawners in Payette Lake during lake survey. ³ From Trawling collections made in September 1996. ⁴ Includes 2,092 females trapped and spawned by Nampa Fish Hatchery.					

Indian Creek (Hells Canyon Reservoir Tributary)

Results of the fish and habitat surveys in the three transects are presented in Appendices B, C and D.

Rainbow trout *O. mykiss* and brook trout were the only species of fish collected in the lower two transects (#2 and #3). We collected bull trout, brook trout, bull trout x brook trout hybrids and rainbow trout from the highest upstream transect #1. Stream gradient changed from 5.3% in transect #1 to 4.8% and 2.5% in transects #2 and #3.

July and August stream temperatures at the lower site (Huntley Gulch) averaged around 12° C while the upper site averaged around 8° C (Figures 4 and 5).

Standard Stream Surveys

Results of the fish and habitat surveys on the three streams are presented in Appendices E, F, and G. Rainbow trout were the only fish species collected in Fawn and Bogus Creeks. Both rainbow trout and brook trout were collected in Tripod Creek.

South Fork Salmon River Guided Fishery

We received information from guided fishing trips that took place from July 7 through September 26. Steelhead/reddband trout *O. mykiss gairdneri*, westslope cutthroat trout *Oncorhynchus clarki lewisi*, and mountain whitefish *Prosopium williamsoni* were reported in the catch (Table 2). Catch rates for all species combined were 2.13 f/h in the South Fork Salmon River, 0.15 f/h in Johnson Creek, and 2.11 f/h in the East Fork South Fork Salmon River.

Of the three streams reported on by guided anglers from Wapiti Meadows Ranch the South Fork downstream has been the most consistently fished since 1994 (Figure 6). Steelhead trout parr (fish <305 mm) have consistently dominated the overall catch, with juvenile westslope cutthroat trout second in abundance. Bull trout were caught infrequently on the East Fork South Fork Salmon River and Johnson Creek. These data will continue to be collected for trend information as the entire South Fork Salmon River drainage is managed with catch-and-release regulations beginning in 1998.

Idaho Habitat and Natural Production Monitoring

Table 3 shows annual total stream area sampled by snorkeling and average abundance of salmonids estimated in each stream for the years 1986 through 1997. The reader must note that this summary is an average for each entire stream across all reaches. The database from which this summary was compiled is available upon request. Reports that summarize the anadromous fish data are written annually (Hall-Griswold and Petrosky 1995). No other summaries of the resident fish data exist to date. Data were also collected in 1984 and 1985 and will be available after verification.

RECOMMENDATIONS

1. Continue kokanee spawner counts in the NFPR to monitor Payette Lake kokanee stocks and to help calibrate kokanee trawling work. Develop hydroacoustic monitoring regime to augment trawl sampling.
2. Complete fish and habitat surveys on the two headwater forks of Indian creek to determine bull trout, brook trout and bull trout xx brook trout hybrid densities.
3. Repeat temperature recording on Indian Creek at same sites as last year and add one survey site just below the two main forks above the Blue Jacket Mine.

Table 2. Fish caught and released during guided angling trips with Wapiti Meadows Ranch Outfitters, South Fork Salmon River downriver from the East Fork South Fork Salmon River confluence, East Fork South Fork Salmon River, and Johnson Creek, 1997.

Fish length (inches)	South Fork Salmon River ^a			East Fork South Fork ^b Salmon River		Johnson Creek ^c
	Steelhead/ Redband Trout	Westslope Cutthroat Trout	Mountain Whitefish	Steelhead/ Redband Trout	Westslope Cutthroat Trout	Steelhead/ Redband Trout
3	4	0	0	1	0	0
4	5	0	0	0	0	0
5	17	0	0	2	0	0
6	46	3	0	5	0	0
7	44	7	0	4	3	0
8	63	3	0	6	5	0
9	30	4	0	11	2	0
10	13	5	0	6	4	2
11	9	4	0	0	2	0
12	4	10	2	4	1	0
13	1	8	2	0	0	0
14	0	0	1	0	1	0
15	0	0	0	0	0	0
16	0	2	0	0	0	0
17	0	0	1	0	0	0
Total	236	46	6	39	18	2
^a average catch rate = 2.13 fish/hour; total hours fished=136 ^b average catch rate=2.11 fish/hour; total hours fished=27 ^c average catch rate=0.15 fish/hour; total hours fished=13						

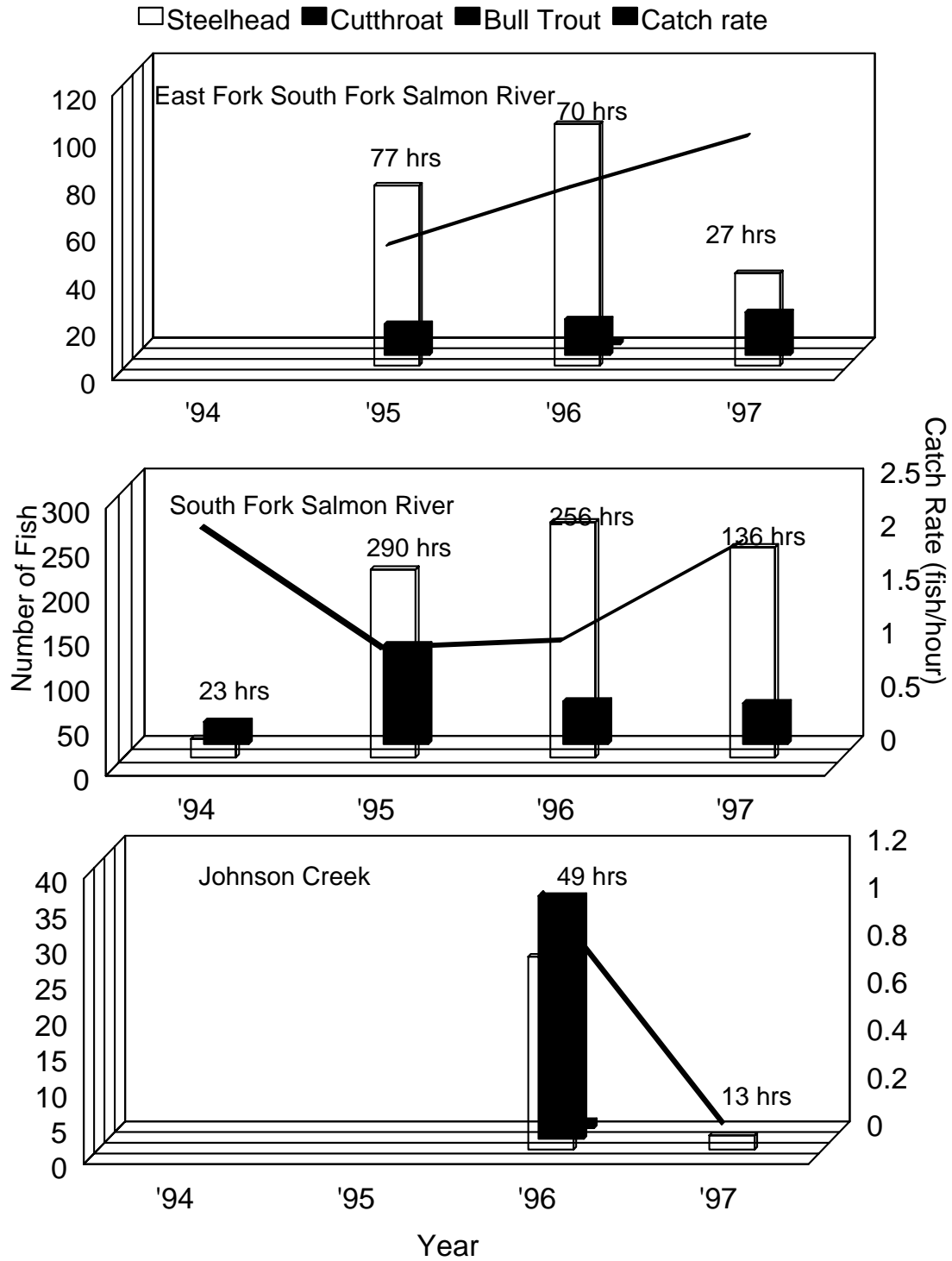


Table 3. Densities of salmonids observed in monitoring sites within the South Fork Salmon, Little Salmon, Middle Fork Salmon river drainages, Idaho, 1986 through 1997.

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipos e clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
										<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm					<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
Middle Fork Salmon River/ Big Creek	1986	9,738	4	4.395	0.041	2.588	0	0	0	0.246	0.544	0.041	0.257	0.072	0	1.356	1.499
	1987	13,032	7	2.103	0	0.913	0	0	0	0.161	0.414	0.008	0.253	0	0	0.054	2.172
	1988	5,749	3	2.314	0.035	3.636	0	0	0	0.191	1.183	0.017	0.139	0	0	0.226	1.496
	1989	9,420	4	2.431	0.032	2.643	0	0	0	1.518	0.786	0	0.127	0	0	0.234	1.242
	1990	9,303	3	1.483	0.290	2.591	0	0	0	0.634	0.774	0	0.064	0.054	0	0.236	0.645
	1991	5,422	3	0.941	0	1.992	0	0	0	0.277	0.516	0	0.037	0	0	0.203	0.480
	1992	12,629	5	1.924	0.230	2.882	0	0	1.386	0.214	0.491	0.032	0.016	0.396	0	1.790	0.768
	1993	7,859	5	1.680	0.318	4.059	0	0	0	0.242	0.178	0.025	0	0.127	0	0	0.725
	1994	4,450	4	6.001	0.067	1.169	0	0	0	0.045	0.247	0.112	0	0.112	0	0.270	0.539
	1995	3,689	4	0	0.081	0.352	0	0	0	0.108	0	0.027	0	0.081	0.081	0.081	0.027
	1996	3,662	4	0.164	0.027	0.956	0.027	0	0	0.109	0.027	0.137	0	1.092	0	0.055	0.027
	1997	6,942	6	0.101	0	0.648	0	0	0	0.288	0.101	0.058	0.014	0.951	0	0.475	0.317
Middle Fork Salmon River (tributary to Big Creek)/	1986	2,965	4	10.759	0.034	3.137	0	0	0	2.226	0	0	0	0.034	0	0.540	0
	1987	2,483	4	15.951	0.201	6.042	0.081	0	0	0	0	0	0	0	0	0	0
Monumen	1988	2,688	4	6.808	0.335	6.994	0	0	0	0.074	0	0	0	0	0	---	---

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipose clipped steelhead	Catch -able rainbow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm			<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
tal Creek	1989	2,863	4	0	0	1,921	0,070	0	0	2,515	0	0	0,035	0	0	0,070	0,140
	1990	2,948	4	1,696	1,221	0,373	0	0	0	4,851	0,068	0	0	0	0,068 ^a	0,305	0
	1991	1,759	2	1,706	0	1,137	0	0	0	1,137	0	0	0	0	0	0	0
	1992	2,402	4	2,706	0	0,125	0,167	0	0	1,749	0,083	0,042	0,042	0	0	0,042	0,125
	1993	2,725	4	1,321	0	3,523	0	0	0	0,440	0,073	0	0	0,550	0	0,183	0,147
Middle Fork Salmon River (tributary to Monumen tal Cr)/W.Fk. Monumen tal Creek	1995	2,979	3	0	0,034	0,739	0	0	0	0,034	0,067	0	0	0	0	0,134	0,134
	1996	1,999	3	0	0	0,450	0	0	0	0,050	0	0	0	0	0	0,100	0,150
	1997	2,139	4	0	0	0,701	0,047	0	0	0,047	0	0	0	0	0	0,187	0,047
	1986	637	1	15,861	0,471	2,356	0	0	0	2,356	0	0	0	0	0	0	0
	1987	657	1	120,852	0,304	2,131	0	0	0	0	0	0	0	0	0	0	0
	1988	610	1	17,680	2,300	11,639	0	0	0	0	0	0,328	0	0	0	0	0
	1989	819	1	10,020	0	0,244	0	0	0	0	0	0	0	0	0	0	0
	1990	768	1	6,120	24,089	0	0	0	0	1,953	0	0,260	0	0	0	0,260	0
	1991	768	1	0,130	0	0	0	0	0	0	0,260	0	0	0	0	0	0,130
	1992	768	1	4,948	0,391	0	0	0	0	0	0	0	0	0	0	0	0
	1993	899	1	0	0	0,779	0	0	0	0	0	0	0	0	0	0	0

^aData suspect

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²															
				Chinook		Wild steelhead		Adipose clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish			
										<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm					<305 mm	>305 mm			<305 mm	>305 mm		
	1994	609	1	0	0	6.734	0	0	0	0	0	0	0	0	0.164	0	0	0	0
	1995	673	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1996	746	1	0	0	0.268	0	0	0	0	0	0	0	0	0	0	0	0.134	
	1997	1130	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1989	---	1	0	0	37 ^b	0	0	0	0	0	1 ^b	0	0	0	0	0	0	0
Middle Fork Salmon River (tributary to Big Creek)/ Rush Creek	1990	518	1	0.193	0	18.357	0	0	0	0.966	0.773	0.386	0.580	0	0	0	0	0.580	
	1991	4,417	12	0	0	5.275	0.068	0	0	3.169	0.770	0.113	0	0.091	0.023	0.294	0.362		
	1992	4,445	10	0.202	0	2.587	0	0	0	1.822	0.922	0.067	0.067	0	0	0.405	0		
South Fork Rush Creek	1991	155	1	0	0	0.647	0	0	0	0	0	1.294	0	0.647	0	0	0	0	0
	1992	263	2	0	0	9.871	0	0	0	0.759	0	2.278	0	0	0	0	0	0	0
Middle Fork Salmon River/ Marble Creek	1986	1768	3	0	0	5.827	0.057	0	0	2.603	0.057	0	0.057	0	0	0.170	0.453		
	1987	2032	3	0	0	1.230	0	0	0	2.362	0	0	0.049	0	0	0.049	0.049		
	1988	3,770	6	0	0	0.796	0.027	0	0	4.801	0.027	0	0.080	0	0	0	0.133		
	1989	2,548	4	0	0	0.118	0	0	0	4.592	0.039	0.118	0	0	0	0.039	0.039		
	1990	1,649	4	0	0	0.789	0	0	0	5.945	0.546	0	0	0	0	0.121	0.182		

^b area not measured; actual fish counts reported

[illegible]

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²														
				Chinook		Wild steelhead		Adipose e clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish		
										<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm											
	1990	1,076	2	27.045	1.580	19.981	0	0	0	0.093	0	0.093	0	0	0	1.394	0	
	1991	1,132	2	5.035	0.530	6.537	0	0	0	0	0	0.177	0	0	0	0.353	0	
	1992	3,090	8	17.184	0.129	14.207	0	0	0	0	0	0.194	0	0	0	0.356	0.032	
	1993	1,186	2	3.963	1.012	4.216	0	0	0	0	0	0.084	0.084	0	0	0.675	0	
	1994	4,290	11	8.205	0.373	6.364	0.023	0	0	0	0	0.210	0.047	0	0	0.350	0.047	
1995	1,243	2	0	0.724	8.608	0.080	0	0	0	0	0	0.161	0.080	0	0	0	0	
1997		1,216	2	1.974	0	1.069	0	0	0	0	0	0	0	0	0	0	0	
1992		125	1	0	0	0.800	0	0	0	0	0	1.600	0	0	0	0	0	
South Fork Chamber- lain Creek																		
South Fork Salmon River	1986	36433	16	5.253	0.104	1.614	0.022	0	0	0.027	0.014	0.005	0.008	0.017	0	1.246	0.022	
	1987	47937	16	7.161	0.065	3.083	0.015	0	0	0	0.004	0.004	0.019	0.004	0	0.056	0.006	
	1988	48,824	15	1.780	0.012	1.677	0.023	0	0	0.016	0.014	0	0.002	0	0	--- ^b	---	
	1989	12,338	8	16.964	0.041	3.518	0.008	0	0	0.713	0	0.024	0	0.008	0	0.875	1.094	
	1990	14,178	8	7.568	0.113	9.085	0	0	0	0.028	0	0	0	0.021	0.007	0.797	0.282	
	1991	14,831	8	1.531	0.007	3.621	0.007	0	0	0.034	0	0	0	0.007	0.007	0.479	0.600	
	1992	14,803	8	1.398	0.007	1.790	0.027	0	0	0.331	0.007	0.007	0.027	0	0	0.351	0.615	
	1993	15,898	11	5.523	0	2.940	0.031	0	0	0.094	0.013	0	0.013	0.019	0	0.056	1.689	
	1994	16,417	5	14.692	0.037	4.032	0	0	0	0.018	0	0.006	0	0.012	0	1.224	0.542	
	1995	15,493	5	4.040	0.529	1.213	0.013	0	0	0	0.006	0	0	0	0	0.232	0.265	

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipose clipped steelhead	Catch -able rainbow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm			<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
	1996	17,779	5	0.906	0.006	1.991	0	0	0	0.056	0.006	0.006	0	0	0	0.771	0.467
S Fk Salmon River/ Buckhorn Cr	1995	304	1	0	0	1.317	0	0	0	0.329	0	0	0	0	0	0.329	0.329
	1996	696	1	0	0	0	0	0	0	0	0	0	0	0	0	0.144	0
South Fork Salmon River/ Dollar Creek	1986	641	1	0	0	1.873	0	0	0	0.468	0	0.936	0	0	0	0	0
	1987	552	1	0	0	3.443	0	0	0	0	0	0	0	0.725	0	0	0
	1988	436	1	0.229	0	7.796	0	0	0	0	0	0	0	0.688	0	0	0
	1989	543	1	0	0	4.605	0	0	0	0	0	0.184	0	1.289	0	0	0
	1990	563	1	0	0	1.066	0	0	0	0.355	0	0	0	0	0	0	0
	1991	585	1	0	0	3.077	0	0	0	0	0	0	0	0	0	0	0
	1992	796	2	0.251	0	0.628	0	0	0	0	0	0	0	0	0	0	0
	1993	767	2	0	0	0.521	0	0	0	0.261	0.130	0.130	0	0	0	0	0
	1986	494	1	0	0	0	0	0	0	0	0	2.833	0	0	0	0	0
	1986	3689	3	6.885	0	2.928	0	0.217	0.217	0	0	0	0.027	0	0	3.063	0
South Fork Salmon River/ East Fork South Fork Salmon	1987	4385	3	2.691	0	2.417	0.023	0.023	0.023	0	0	0.023	0.023	0	0	0	0
	1988	4,472	3	0.398	0.021	2.599	0	0	0.063	0	0	0	0.042	0	0	0	0
	1989	4,524	3	0.332	0	2.586	0.044	0	0	0	0.022	0.022	0	1.039	0	0.774	0.066
	1990	4,679	3	0.513	0.021	3.228	0.278	0	0	0.085	0	0.021	0.064	0.043	0	1.988	1.069

Drainage/ Stream	Year	Area sampled		Chinook		Wild steelhead		Adipos e clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm			<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
Salmon River	1991	5,153	3	1.281	0.039	1.242	0.330	0	0.019	0.330	0	0.019	0	0	0	0.155	0.369
	1992	4,091	3	1.564	0.098	2.224	0.049	0	0	1.662	0.147	0.049	0.049	0	0	0.758	2.200
	1993	3,495	2	1.345	0	1.202	0	0	0	0.114	0.086	0.029	0.029	0	0	0.315	0.687
	1994	43,884	35	11.909	0.091	3.815	0.089	0	0	0.112	0.046	0.062	0.064	0	0	0.533	0.868
	1995	4,302	3	0.023	0	0.511	0	0	0	0.023	0.023	0.023	0.023	0	0	0.186	0.349
	1996	7,050	5	0.071	0.014	1.958	0.057	0	0	0.099	0.028	0.057	0.014	0	0	1.036	0.723
	1997	7,585	5	0.237	0	1.622	0.040	0	0	0.119	0.013	0.053	0.013	0	0	0.330	0.343
	1994	2,193	6	0	0	0.547	0.046	0	0	0.091	0	2.326	0	0	0	0	0
	1997	385	1	0	0	0.260	0	0	0	0	0	0	0	0	0	0	0
East Fk S Fk Salmon R/ Profile Cr East Fk S Fk Salmon R / Sugar Creek	1994	765	2	13.733	0	3.793	0	0	0	0.262	0	0.262	0	0	0	0.131	0
	1997	548	1	0	0	0.365	0	0	0	0	0	0	0	0	0	0	0
East Fk S Fk Salmon R/ Tamarack Cr	1994	736	2	1.358	0	7.335	0	0	0	0	0	0.543	0	0	0	0	0.136
	1997	371	1	0	0	2.969	0	0	0	0	0	0.270	0	0	0	0	0
South Fork Salmon	1986	15590	10	4.695	0.090	1.026	0	0	0	0	0	0	0	1.584	0	0.192	0
	1987	14050	11	31.851	0.078	0.797	0	0	0	0	0	0	0	0.826	0	0	0.014

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipos e clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
										<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm					<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
Salmon River (tributary to East Fk S Fk Salmon River/ Johnson Creek	1988	8,784	8	25.29 ^c	0.057	2.846	0	0	0.080	0	0	0	0.011	0.433	0	0.023	0.057
	1989	8,473	8	3.435	0.012	1.263	0.012	0	0	0	0	0	0	1.428	0	0.142	0.047
	1990	25,319	28	0.280	0	0.249	0.004	0	0	0	0	0	0	0.205	0	0.043	0.008
	1991	2,567	2	0.273	0	1.520	0.078	0	0	0.662	0	0	0	0	0	0	0.156
	1992	6,659	7	0.240	0.030	0.736	0	0	0	0	0	0	0	0.105	0	0.135	0.180
	1993	10,128	9	5.499	0	1.155	0.030	0	0	0.010	0	0	0.010	0.375	0	0.079	0.158
	1994	45,153	52	16.052	0.069	2.678	0.027	0	0	0.004	0.009	0.007	0.009	0.808	0.002	0.179	0.115
	1995	29,038	22	0.009	<0.001	0.001	<0.001	0	0	0	0	<0.001	0	0.001	0.001	0.001	<0.001
	1996	10,008	10	0	0	1.709	0.010	0	0	0	0	0	0	0.649	0	0.140	0.090
	1997	13,975	12	1.481	0	1.367	0	0	0	0.014	0	0	0	0.265	0	0.379	0.272
Johnson Cr/ Burnt Log Cr	1994	1471	4	44.807	0.068	11.559	0	0	0	0	0	0	0	0	0	0.068	0
	1997	1062	2	0	0	1.130	0	0	0	0	0	0	0	0	0	0	0
South Fork Salmon River	1986	783	2	14.311	0.511	0.128	0	0	0	0	0	0	0	29,900	0	0	0
	1987	792	2	13.515	0	0.126	0	0	0	0	0	0	0	19,199	0	0	0
	1988	374	1	142.87 ^d	0	0	0	0	0	0	0	0	0	15,784	0	0	0

^cchinook parr density influenced by local recent stocking

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipose clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
										<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
(tributary to Johnson Creek)/ Rock Creek	1989	Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm	0	0	0	0	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
	329	1	3.340	0	0.304	0	0	0	0	0	0	121.16 6	0	0	0	0	
	572	2	0.699	0	0	0	0	0	0	0	0	22.382	0	0	0	0	
	309	1	0	0	0	0	0	0	0	0	0	0.972	0	0	0	0	
	432	1	0	0	0	0	0	0	0	0	0	0.925	0	0	0	0	
	368	1	0.816	1.088	2.992	0	0	0	0	0	0	10.880	0	0	0	0	
	383	1	0	0	2.348	0	0	0	0	0	0	0.522	0.522	0	0	0	
	568	1	0	0	0	0	0	0	0	0	0	35.545	0	0	0	0	
	529	1	0	0	0	0	0	0	0	0	0	0.757	0	0	0	0	
	4444	1	4.253	0	0.045	0	0	0	0	0	0	0	0	0	0	0	
South Fork Salmon River (tributary to Johnson Creek)/ Sand Creek	1987	506	1	608.30 ^a	0	0.988	0	0	0	0	0	120.55 3	0	0	0	0	
	1988	447	1	132.60 ^a	0	0	0	0	0	0	0	13.417	0	0	0	0	
	1989	404	1	0	0.248	0	0	0	0	0	0	21.782	0	0	0	0	
	1990	769	2	0	0	0	0	0	0	0	0	3.642	0	0	0	0	
	1991	0	0	---	---	---	---	---	---	---	---	---	---	---	---	---	
	1992	362	1	0	0	0.553	0	0	0	0	0	1.934	0	0	0	0	
	1993	364	1	0	0	0	0	0	0	0	0	0	0	0	0	0	

^d chinook parr density influenced by recent stocking

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipose clipped steelhead	Catch -able rainbow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
				Age 0	Age 1	<305 mm	>305 mm			<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
	1994	673	1	0	0	0.149	0	0	0	0	0	0	0	4.457	0	0	0
	1995	503	1	0	0	0	0	0	0	0	0	0	0	0.398	0	0	0
	1996	396	1	0	0	0	0	0	0	0	0	0	0	4.295	0	0	0
	1997	723	1	0	0	0	0	0	0	0	0	0	0	13.139	0	0	0
Johnson Cr/ Whiskey Cr	1990	394	2	9.400	0.254	0.508	0	0	0	0	0	0	0	9.654	0	0	0
South Fork Salmon River/ Secesh River	1987	4281	3	35.713	0.841	8.339	0	0	0	0	0	0.234	0.023	0.561	0.023	1.331	0.140
	1988	3,532	3	13.362	0.226	3.793	0	0	0	0	0	0	0.028	0.057	0	0.170	0.085
	1989	3,433	3	4.574	1.136	1.282	0	0	0	0.961	0	0	0	0.874	0	0.874	0
	1990	3,432	3	0.175	2.273	0.204	0	0	0	0	0	0	0	0	0	0.146	0.291
	1991	5,038	4	0.953	0	0.040	0	0	0	0	0	0.198	0.020	0	0	0.079	0.119
	1992	9,975	11	7.037	0.120	2.165	0	0	0	0	0	0.090	0	0.040	0	0.491	0.130
	1993	2,811	3	3.415	0.036	3.771	0	0	0	0.320	0	0.142	0	0.107	0	0.320	0
South Fork Salmon River (tributary to Secesh River/	1994	3,922	3	5.176	0.025	1.963	0	0	0	0	0	0.051	0	0.127	0	0.841	0.178
	1995	3,733	3	0.482	0.027	0.295	0.027	0	0.054	0	0	0.080	0.027	0.027	0	0.107	0.241
	1987	1210	2	28.999	1.570	3.305	0	0	0.248	0	0	0.330	0.083	5.618	0.165	0.744	0
	1988	1,358	2	2.061	1.178	1.988	0	0	0	0	0	0.074	0	1.988	0.074	0	0
	1989	1,512	2	8.533	0	21.696	0	0	0	0	0	0	0	37.307	0.132	0	0
	1990	1,512	2	14.683	1.653	1.124	0	0	0	0	0	0	0.132	2.844	0	0.331	0.066

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipose clipped steel-head	Catch-rain-bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm			<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
River																	
	1988	4,436	3	2.074 ^a	0.383	8,274	0	0.924	0.090	0	0	0.023	0	0	0	1.285	0.113
	1989	9,213	6	0.890 ^a	0.011	5,655	0.076	0.033	0	0	0	0	0	0	0	0.119	0.065
	1990	3,709	3	0.512	0.216	12,970	0.027	3.155	0	0	0	0	0.027	0	0	0.216	0.243
	1991	3,299	2	0.667	0.212	8,426	0.485	0	0	0.394	0.121	0	0	0	0	0.152	0.152
	1992	4,551	3	0.242	0.066	8,591	0.110	0.088	0	1,384	0.022	0	0	0	0	0.132	0.857
	1993	4,284	3	0.023	0.303	7,959	0.397	0	0.023	0	0	0	0	0	0	0.023	0.047
	1994	0	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1995	4,363	3	0.046	0.023	7,358	0	0.183	0.069	0.023	0	0.023	0	0	0	0.046	0.069
	1996	4,742	3	0.084	0.021	6,411	0.148	0.063	0	0.021	0	0	0.021	0	0	0.190	0.274
Little Salmon River/ Boulder Creek	1986	6817	11	19.407	0.088	10,841	0	0	0.734	0	0	0.059	0	0	2.186	0	0
	1987	3424	4	16.121	0.905	27,540	0.029	0	0	0	0	0.029	0	0	4.235	0	0.058
	1988	5,308	9	7.875	0.075	21,101	0.038	0.113	0.038	0	0	0.019	0.019	5.049	0.038	0	0
	1989	4,922	6	39.334	0.183	27,185	0.061	0	0.081	0	0	0.081	0.020	0.752	0	0.041	0.061
	1990	2,983	4	13.210	1.039	20,619	0.067	0.034	0.034	1.073	0	0.034	0	0.570	0.034	0	0
	1991	2,883	4	7.181	0.104	14,501	0.347	0.069	0	1.145	0	0	0	2.081	0.069	0	0
	1992	2,718	4	2.391	0	25,717	0.258	0	0	6.034	0.037	0.147	0	2.796	0.037	0	0
	1993	3,362	4	0.476	0.030	3,599	0	0	0	0.030	0	0	0	0.119	0	0.059	0.059
	1996	1296	2	1.311	0	13,807	0.231	0.154	0	0	0	0.077	0	0	0	0	0
	1997	3123	4	2.530	0	9,223	0.224	0	0	0.096	0	0.320	0	3.362	0.032	0.064	0.192

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipos e clipped steel- head	Catch- able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
										<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
		Total (m ²)	# Sites	Age 0	Age 1	<305 mm	>305 mm					<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
Little Salmon River/ Hazard Creek	1986	1264	1	0	0	14.320	0.079	0	0.554	0.079	0	0	0	0	0	0.079	0.079
	1987	1544	1	0.324	0	17.547	0.324	1.619	0.907	0	0	0	0.065	0.065	0	0.453	0.065
	1988	1,404	1	0.641	0	35.684	0	5.057	3.917	0	0	0	0	0	0	0.783	0
	1989	1,663	1	0.180	0.120	18.218	0	1.323	0.541	0	0	0.120	0.120	0	0	0.180	0
	1990	3,248	2	0.031	0	18.073	0	4.464	0.123	0.062	0	0.031	0.062	0	0	0.185	0.092
	1991	1,448	1	0	0.069	14.982	0.829	2.278	0	2.831	0	0.138	0	0	0	0	0.276
	1992	1,930	2	0	0	15.133	0.052	2.125	0	4.301	0	0	0	0	0	0.052	0
	1993	2,184	2	0	0	6.228	0.550	1.008	2.427	0	0	0	0.137	0.137	0	0.046	0
	1986	1230	1	0.894	0	15.285	0.081	0	0	0	0	0.163	0.081	0	0	0	0
Little Salmon River/ Rapid River	1987	1390	1	6.043	0.144	17.986	0	0	0	0	0	0.432	0	0	0	0	0
	1988	1,240	1	7.097	0.565	32.581	0	0	0	0	0	0.323	0.081	0	0	0	0
	1989	1,360	1	6.103	0.147	19.191	0	0	0	0.074	0	0.294	0.074	0	0	0	0
	1990	11,921	14	0.193	0.008	8.716	0.109	0	0	0.025	0.008	0.084	0.075	0	0	0	0
	1991	2,736	7	0.146	0	7.786	0.402	0	0	0	0	0.037	0.183	0	0	0	0
	1992	8,659	11	1.790	0.058	12.587	0.196	0	0	0.012	0.012	1.039	0.092	0.012	0	0	0
	1993	9,172	10	0.469	0.425	8.995	0.153	0	0	0	0	0.240	0.098	0	0	0	0
	1994	6,838	11	2.281	0.146	10.180	0.088	0	0	0.059	0	1.155	0.088	0	0	0	0
	1995	4,263	6	0.141	0	7.483	0	0	0	0.070	0	0.235	0	0	0	0	0
	1996	7,421	10	0	0	3.167	0.094	0	0	0	0	0.337	0	0	0	0	0

Drainage/ Stream	Year	Area sampled		Number of fish/100 m ²													
				Chinook		Wild steelhead		Adipos e clipped steel- head	Catch -able rain- bow trout	Westslope cutthroat trout		Bull trout		Brook trout		Whitefish	
				Age 0	Age 1	<305 mm	>305 mm			<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm	<305 mm	>305 mm
West Fork Rapid River	1997	Total (m ²)	# Sites														
	1997	8,094	10	0	0	3,336	0,062	0	0	0	0,012	0,358	0,012	0	0	0	0
	1986	830	1	0	0	3,614	0	0	0	0	0	0,241	0	0	0	0	0
	1987	563	1	0,178	0	8,523	0,178	0	0	0	0	1,598	0	0	0	0	0
	1988	598	1	0	0,167	21,557	0	0	0	0	0	1,170	0	0	0	0	0
	1989	783	1	1,277	0,255	8,429	0,128	0	0	0	0	0,894	0,128	0	0	0	0
	1990	990	2	0	0	9,091	0,202	0	0	0	0	0,303	0	0	0	0	0
	1991	519	1	0	0	6,362	0	0	0	0	0	0	0,193	0	0	0	0
	1992	960	2	0	0	14,585	0,104	0	0	0	0	0,833	0	0	0	0	0
	1993	680	1	0	0	7,496	0,147	0	0	0	0	0,588	0	0	0	0	0
	1994	560	1	0,054	0,014	0,473	0	0	0	0	0	0,054	0	0	0	0	0
	1995	562	1	0	0	1,098	0,021	0	0	0	0	0,124	0	0	0	0	0
	1996	756	1	0	0	5,160	0,662	0	0	0	0	0,132	0	0	0	0	0
	1997	952	1	0	0	4,203	0,210	0	0	0	0	0,210	0,105	0	0	0	0

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APPENDICES

Appendix A. Standard snorkeling technique used to estimate fish densities for Idaho Habitat and Natural Production Monitoring.

- ↗ The number of snorkelers depends on visibility and width of the stream, so that adjacent snorkelers are within clear sight of each other.
- ↗ Snorkelers move slowly but steadily upstream in an assigned lane. Widths of lanes are determined by visibility. The snorkelers are not in a single line perpendicular to the stream, but are staggered with snorkelers closest to stream banks slightly ahead (1 to 3 m) of snorkelers in the thalweg. The crew essentially forms a V in the stream, and coordinates counts of fish that move through multiple lanes.
- ↗ Crews are trained prior to each field season in snorkeling techniques, fish identification, and size estimation.
- ↗ Visibility is measured prior to snorkeling (with an orange and white nylon measuring tape held underwater) to ensure that snorkelers are spaced properly. In most streams visibility is >3 m.
- ↗ Snorkeling is done during midday, at stream temperatures preferably >10 C, but no lower than 8 C.
- ↗ Chinook salmon are identified and counted as young-of-the-year, yearlings, or adults. All other salmonids are identified and lengths estimated to the nearest inch. A data recorder walks behind snorkelers, recording data given verbally by snorkelers as they move upstream. Alternatively, each snorkeler records fish data on an underwater slate, which is transferred to data forms after the entire site is sampled. A sketch is made and photographs taken of each site to ensure the identical area can be sampled the following year. Flagging may be placed at beginning and end of each site.

1997 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-22

Project II: Technical Guidance

Subproject II-C: McCall Subregion

Period Covered: July 1, 1997 to June 30, 1998

ABSTRACT

McCall Subregion fishery management personnel responded to more than 300 requests and opportunities for technical input. Comments were provided to state and federal agencies on proposed activities for which they have regulatory authority. Advice and technical assistance were provided to private businesses and the public on activities associated with fish, or having impacts on fish populations or fish habitat. The major topics of involvement included stream channel alterations, Idaho Outfitters and Guides licensing, private pond permits, and land management planning. We provided data and technical advice to an increased number of fisheries consultants.

We also gave presentations to schools, sportsperson groups, and civic organizations. We answered many questions from the angling public on fishing opportunities, regulations, techniques, and specific waters.

Authors:

Don Anderson
Regional Fishery Manager

OBJECTIVES

1. To protect or minimize impacts to McCall area fisheries by providing technical fisheries input to government agencies with regulatory or land management authority.
2. To provide technical fisheries input, guidance, and advice to private entities and the general public.
3. To promote understanding of the environmental requirements of fish populations and appreciation of their values.

RECOMMENDATIONS

1. Continue to provide technical fisheries input to the entities which most affect fish populations.
2. Continue to provide technical guidance and advice to private interests and the general public.
3. Expand efforts to educate the public in the environmental requirements for fish.

RESULTS

The following (Table 1) lists the public and private entities and number of contracts and responses made for each during 1995.

Table 1. Summary of technical guidance responses and activities by McCall fisheries management personnel in 1997.

Agency or individuals	Number of responses
U.S. Forest Service	33
U.S. Bureau of Land Management	4
U.S. Environmental Protection Agency	6
U.S. Army Corps of Engineers	11
U.S. Natural Resources Conservation Service	12
U.S. Bureau of Reclamation	13
Idaho Department of Water Resources	11
Idaho Department of Lands	18
Idaho Department of Health and Welfare/DEQ	11
Idaho Department of Transportation	3
Idaho Outfitters & Guides Board	5
Health Districts	2
Hydroelectric developers	2
Private fish pond owners	18
Public meetings and presentations	12
Mining	7
County Commissions	7
U.S. Fish & Wildlife Service	9
Nez Perce Tribe	6
National Marine Fisheries Service	11
Municipalities	4

Agency or individuals	Number of responses
Idaho Department of Parks and Recreation	4
Trout Unlimited	4
Big Payette Lake Water Quality Council	5
Columbia River Intertribal Fish Commission	1
Idaho State Legislators	3
Cascade Reservoir Restoration TAC	12
Boise Cascade Corporation	6
Consultants	18
Universities	3
Northwest Power Planning Council	3
Oregon Department of Fish and Wildlife	5
Federal Highways	2
Total	254

1997 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fisheries Management F-71-R-22

Project III: Habitat Management Subproject III-C: McCall Subregion

Contract Period: July 1, 1997 to June 30, 1998

ABSTRACT

The Regional Fishery Manager participated on a technical advisory committee for the Big Payette Lake Water Quality Council. The group conducted studies and developed a comprehensive technical report identifying nutrient and bacterial contamination sources and recommended remedial action. The technical report resulted in a lake management plan and an implementation program which were both passed into legislation in the 1997 session.

Fishery personnel participated on a technical advisory committee for the Cascade Restoration Project to improve water quality and fish habitat in Cascade Reservoir. Cascade Reservoir is listed as a water quality limited water by the Idaho Division of Environmental Quality not fully supporting beneficial uses including cold water biota. The technical advisory committee was directed to identify phosphorus sources and develop reduction measures. A Total Maximum Daily Load (TMDL) has been established that will result in a 37 percent reduction in phosphorus loading. Draft source plans were prepared and will be implemented as funding allows.

The opportunity for a conservation easement on private property in Burgdorf Meadows was evaluated and pursued. This is a critical spawning area for wild summer chinook salmon *Oncorhynchus tshawytscha* and was imminently at risk of recreation home development. We prepared a proposal and sought funding to allow the Idaho Department of Fish and Game to acquire the easement.

Fisheries personnel participated with other state and federal agencies in the assessment and implementation of repair work to Highway 95 and to the Little Salmon River stream channel caused by the January 1997 flooding of the Little Salmon River.

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